



## Changing Paradigms of Energy in Transportation

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### Editorial by Tom Warne

For some time now I have been struck by the very interesting things going on with energy, its production, distribution, and its industrial, commercial and residential/personal use. It seems that energy will be at the center of what happens in our lives in the next 10 years. Changes are going to occur. They might be rough at first but, in the end, our lives will be much different than they are today. Let me first frame the issue from a non-transportation viewpoint and then draw the relationship to our industry and our future.

One of my clients is Kennecott Land which is a subsidiary of Rio Tinto, one of the world's largest mining companies. I provide strategic transportation consulting regarding their mobility needs in the Salt Lake area. They own about 100,000 acres of raw land in western Salt Lake County and have bold plans to develop this property into exciting residential and commercial uses. Their first big development is called Daybreak, located in South Jordan, Utah. It is comprised of 4000 acres and will eventually have over 13,000 homes, 30,000 residents and over 8 million square feet of commercial space. It will be served by the future Mountainview Corridor (a controlled access highway) and by the Mid-Jordan LRT line currently under construction. It is without a doubt, the largest and most exciting Smart Growth project in the United States. If you come to Salt Lake City you really should take a drive out to Daybreak; it will be well worth your time. Many people are talking about Smart Growth but no one is planning or building on this scale anywhere else in the country

Besides the many Daybreak features that reflect "real" sustainability (students of sustainability find the word to be overused and often inappropriately applied due to its current popularity in our vernacular). Garbett Homes recently introduced the Salaris series: homes in Daybreak that come with photo voltaic options which are nothing visionary. In other words, residents are able to purchase a home with solar roof panels already installed, or with wiring and other system requirements in place to make future placement possible without expensive retrofit. These homes will generate up to 70% of their own energy needs Their vision is of the future of power generation and consumption--distributed solar power will likely become part of our lives in the near future.

Lest you think Daybreak and Garbett are just a passing fancy consider that the City of Tucson passed an ordinance effective July 1, 2009 requiring all new single family homes and duplex's to come with either photo voltaic systems in place or to be photo voltaic ready in terms of wiring and space requirements for future installation. Fast Company magazine's July 2009 issue has an excellent article on distributed solar power generation well worth reading. To add further strength to the argument that solar is here to stay consider that President Obama is committed to generating 25% of the US energy demand through renewable sources by 2025 of which Solar will

be a big part.

What does this have to do with transportation? That's the second part of this editorial.

Those who have read the Tom Warne Report for some time know I mentioned that one of our vehicles is a hybrid-electric Toyota Camry. We have gotten over 40 mpg in that car compared to about 20 mpg with our other cars. As a family we have tried to improve our environmental footprint as have many others. The hybrid Camry and Toyota's Prius have both successfully made the transition from gasoline fueled engines to full electric vehicles (EV) or plug-in hybrid electric vehicles (PHEV).

There has been much ado about the Chevrolet Volt-- touted to get up to 230 miles per gallon. Research shows that 80% of America's public travels less than 40 miles in a given day—meaning that the Volt (40 miles between charges) or even the Nissan Leaf (with a 100-mile range between charges) would meet those needs and use no fuel. The market is filling with hybrid electric vehicles made by Toyota, Hundai, Honda, Ford, and Mercedes. Whether a hybrid electric, full electric vehicle (EV) or a plug in hybrid electric vehicle (PHEV), the market is beginning to open up the world of vehicles which will have less carbon impact. Distributed solar power is increasingly popular in the power generation sector and the same is likely to happen with vehicle technology. Some will say that technology is still far in the future, but I would suggest it is closer than you think.

In 1988 I wrote my master's thesis at Arizona State University on an Apple IIC computer. It was a small step above the Commodore 64 which some of our more mature readers will remember. You could literally go get something to eat while the Apple IIC did spell check on my thesis--it was that slow. Today you probably have multiple computers in your home linearly faster than the Apple IIC. In 20 years our world of technology has changed in ways we never imagined.

My point is this: what energy innovations are we missing as transportation professionals? What aspect of energy production, distribution, and consumption will impact the foundations of the transportation industry and force us to make that "hard right turn" we can't foresee. Already the Warnes pay less fuel tax as we use the hybrid Camry to visit the kids at BYU and do errands in town. As vehicles use less fuel and generate fewer fuel tax revenues the world we see as being "normal" changes. Just as Netflix, TiVo and efforts to advance on-demand video over the Internet are putting Blockbuster and Hollywood Video out of business--our business is also changing. What are we doing that is the equivalent of a Blockbuster store which will be out of business soon? What part of our business model is dying we don't yet realize?

The changes in energy will not be linear, just as the explosion of technology that changed my Apple IIC to the PDA I carry everywhere was exponential in nature. I believe the predictions of the proliferation of electric vehicles are conservative. If we learned anything from computing technology it is that changes will happen faster than we can track.

Will the early technologies be awkward and clumsy? Certainly. Will they disappoint us in their performance at first? Of course. Think about that brick you used to call a cellular phone less than 20 years ago. Eventually, good things happen and at a pace most don't expect. What are you doing to prepare for this sweeping change in energy in your business and personal life? I guarantee that you will be impacted.



Tom